QK158
.T669
1855

REPORT

ON THE

BOTANY OF THE EXPEDITION:

BY

JOHN TORREY AND ASA GRAY.

ROUTE ON THE FORTY-FIRST PARALLEL OF NORTH LATITUDE, UNDER THE COMMAND OF LIEUT. E. G. BECKWITH, THIRD ARTILLERY;

AND

ROUTE NEAR THE THIRTY-EIGHTH AND THIRTY-NINTH PARALLELS OF NORTH LATITUDE, UNDER THE COMMAND OF CAPT. J. W. GUNNISON, CORPS OF TOPOGRAPHICAL ENGINEERS.

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BOTANICAL REPORT.

Botanical Report, by JOHN TORREY *and* ASA GRAY, *upon the Collections made by Captain* GUNNISON, *Topographical Engineers, in* 1853, *and by Lieutenant* E. G. BECKWITH, *Third Artillery, in* 1854.

I.—Plants collected by Mr. James A. Snyder, under the direction of Lieutenant E. G. Beckwith, U. S. A., in an expedition made under his charge from Great Salt Lake, Utah Territory, directly west to the Sacramento valley, in California, in the months of May, June, and July, 1854.

II.—Plants collected by Mr. F. Creutzfeldt, under the direction of Captain J. W. Gunnison, U. S. A., in charge of explorations for a railroad from Fort Leavenworth, *via* the Kansas, Arkansas, and Huerfano rivers, the Sangre de Cristo Pass, San Luis valley, Coochetopa Pass, Grand and Green rivers, and thence into the Great Basin, in the vicinity of the Sevier or Nicollet lake. The collection was made from early in June to late in October, 1853.

PART I.

Plants collected by Mr. JAMES A. SNYDER, *under the direction of Lieutenant* E. G. BECKWITH, *U. S. Army, in an expedition made under his charge from Great Salt lake, directly west, to the Sacramento valley, in California, in the months of May, June, and July,* 1854.

AQUILEGIA CANADENSIS, *Linn.; Torrey and Gray, Fl.* 1, *p.* 29. In a cañon east of the Sierra Nevada; June 17. Few phanerogamous plants of this country have so great a geographical range as has this species, (including the A. formosa, *Fischer*,) namely: from Hudson's Bay to Florida and New Mexico, and from Unalaschka to California.

DELPHINIUM MENZIESII, *DC. Syst.* 1, *p.* 355; *Hook. Fl. Bor.-Amer.* 1, *p.* 25. Near Great Salt Lake. Also, in a valley of the Sierra Nevada; with an incomplete specimen of what may be a white-flowered variety; May and June.

ESCHSCHOLTZIA CALIFORNICA, *Cham. and Nees, Flor. Phys. Berol. p.* 73, *t.* 15, *non Lindl.* Sierra Nevada; June 25.

TURRITIS RETROFRACTA, *Hook. Fl. Bor.-Amer.* 1, *p.* 41. Summit of a mountain in the Great Basin east of the Sierra Nevada. In flower only; June 1.

ERYSIMUM ASPERUM, *DC.; Torr. and Gray, Fl.* 1, *p.* 95. Mountains near Great Salt Lake; May.

SPRAGUEA UMBELLATA, *Torr. Pl. Fremont, in Smithson. Contrib. p.* 4, *t.* 1. Summit of Noble's Pass, Sierra Nevada; July 3. The specimens of this interesting Portulacaceous genus accord with those of Col. Fremont, who alone has gathered the plant hitherto; but being younger, the corollas are more conspicuous, and the scarious sepals not so large.

LEWISIA REDIVIVA, *Pursh, Fl.* 1, *p.* 368; *Hook. and Arn. Bot. Beech. p.* 334, *t.* 86. On the Sierra Nevada; June 25.

SIDALCEA MALVÆFLORA, *Gray, Pl. Wright.* 1, *p.* 16. Mountains east of the Sierra Nevada; June 14.

VIOLA BECKWITHII, (n. sp.): subcaulescent; ascending stems abbreviated; cauline leaves biternately or pedately parted, decurrent on the margined petiole, the lobes or segments oblong-linear, hirsute-puberulent; stipules minute, scarious, entire; sepals linear, obtuse, ciliolate; lower petal barely saccate at the base, purple, with yellow claws, the two upper shorter and deep violet. On the slope of a mountain between Great Salt Lake and the Sierra Nevada;

June 1. A well-marked species; with the foliage somewhat like that of V. delphinifolia, *Nutt.;* but the primary divisions compoundly divided in a ternate or pinnatisect manner; and there is a distinct stem, although it is only an inch long in the specimen. Lobes of the leaves half an inch or less in length. Stipules very small and inconspicuous, except those of the lowest and subradical leaves, which are larger. Peduncles 2 inches, naked. Petals half an inch long. Style short, clavate, minutely bearded at the gibbous summit; the stigma lateral.

Trifolium altissimum, *Dougl. in Hook. Fl. Bor.-Am.* 1, *p.* 130, *t.* 48. On the Sierra Nevada; June 22.

Astragalus (Phaca) Purshii, *Dougl. in Hook. Fl. Bor.-Am.* 1, *p.* 152. Phaca mollissima, *Nutt. in Torr. and Gray, Fl.* 1, *p.* 350; *Torr. in Stansbury's Rep. p.* 385, *t.* 3, *figs.* 4 and 5. Near Humboldt river; in fruit. In reuniting Phaca to Astragalus, the name given by Douglas to this species is to be restored, both on account of its priority, and because there is already an Astragalus mollissimus.

Astragalus (Phaca) Utahensis: caespitose, very softly and densely white-tomentose; stems short and depressed; leaflets 6–9 pairs, broadly obovate or nearly orbicular; stipules lanceolate, subulate-pointed, free; peduncles equalling or exceeding the leaves, subcapitately 3–6-flowered; bracts setaceous, twice the length of the pedicels; teeth of calyx subulate, much shorter than the cylindrical tube; corolla violet-purple; legumes extremely woolly, sessile, oblong, pointed, incurved, strictly one-celled. Phaca mollissima *β.* Utahensis, *Torr. in Stansb. Rep. p.* 385, *t.* 2. Near Lone Rock, south of Great Salt Lake. In flower; May. Although closely allied to the preceding, this may safely be considered as a distinct species; and so Dr. Torrey was inclined to regard it. A. Purshii, besides its oblong and often acute or acutish leaflets, has the foliage and calyx, &c., clothed with villous or shaggy hairs, so that Hooker describes it as "hirsutissimus," and the flowers are said by Douglas to be yellow, meaning doubtless ochroleucous, except a purple tip to the keel. The present plant is white, with a soft and matted tomentum, and the corolla is violet-purple. The mature pods, (here described chiefly from a fruiting plant gathered by Captain Stansbury, which is doubtless a form of the species, though with shorter peduncles,) after detaching the thick mass of wool in which they are imbedded, are found to be narrower, but otherwise similar to those of the preceding. In the figure above cited, the tube of the calyx is mostly represented quite too short. It is really of the same elongated form as in A. Purshii, but the teeth are not so setaceous.

Astragalus (Homalobus?) Beckwithii, (n. sp.): glabrous or nearly so, low, perennial; stems branched from the base, ascending; stipules triangular-lanceolate, nearly free; petioles slender; leaflets 6–9 pairs, small, oval-orbicular, rather scattered; peduncles about the length of the leaves, 7–8-flowered; bracts subulate, small; calyx oblong-campanulate, sparsely and minutely black-haired; the aristiform-subulate teeth nearly as long as the tube; corolla ochroleucous, incurved, the oblong vexillum deeply emarginate; ovary linear, stipitate. On the Cedar Mountains, west of Lone Rock, and south of Great Salt Lake; May; in flower. The slender stems, with the peduncles that terminate them, are only 4 inches long in the specimen, and not exceeding the radical leaves; but as they go on to branch they doubtless attain a considerably greater height in the season. Leaflets $2\frac{1}{2}$ or 3 lines long, slightly petiolulate, rather fleshy in texture, veinless, glabrous, except some minute hairs on the midrib and margins when first developed. Flowers crowded on very short pedicels; tube of the calyx 3 lines long; corolla 9 lines long, abruptly curved near the obtuse tip of the keel, which is much shorter than the wings and vexillum; ovary glabrous, more or less compressed, many-ovuled, neither suture at all introflexed, raised on a stipe which is soon about as long as the tube of the calyx. The fruit, unfortunately, is still unknown; but the plant is evidently one not before described.

Astragalus diphysus, *Gray, Pl. Fendl. p.* 34? Southwest of Great Salt Lake; May. In flower only, and not to be accurately determined.

LUPINUS AFFINIS, *Agardh, Syn. Lup. p.* 20; *Torr. and Gray, Fl. p.* 376. Agate Pass of the Quartz Mountains; June 1.

LUPINUS DECUMBENS, var. ARGOPHYLLUS, *Gray, Pl. Fendl. p.* 38. Utah, in a cañon; May 29. Flowers yellow and white. This is the same as Fendler's No. 167, and is very likely Pursh's L. argenteus. L. laxiflorus, perhaps, runs into it. The calyx is conspicuously saccate-spurred on the upper side.

ROSA GYMNOCARPA, *Nutt. in Torr. and Gray, Fl.* 1, *p.* 461. On the Sierra Nevada; July.

ŒNOTHERA MARGINATA, *Nutt. in Torr. and Gray, Fl.* 1, *p.* 500. On the summit of the Humboldt Mountains, Utah; May.

ŒNOTHERA (CHYLISMIA) CLAVÆFORMIS, *Torr. in Frem. Rep. 2d Exped. p.* 314. At the foot of the Sierra Nevada, on the eastern side; June. What appears to be a cinereous and somewhat hairy, more caulescent, and branching variety of this, was gathered by Coulter: No. 180 of his California collection.

ŒNOTHERA (SPHÆROSTIGMA) ALYSSOIDES, *Hook. and Arn. Bot. Beech. p.* 394; *Hook. Ic. Pl. t.* 339. Near Humboldt river; June. Flowers white.

ŒNOTHERA (PRIMULOPSIS) TANACETIFOLIA (n. sp.): stemless, perennial? minutely pubescent; leaves lanceolate in outline, interruptedly pinnately parted into very numerous small segments, some of them minute and oval or oblong, the others linear; all sinuate-toothed or pinnatifid; tube of the calyx shorter than the leaves, filiform, dilated at the summit; the segments lanceolate, shorter than the obovate petals and the style; anthers oblong, much shorter than the moderately unequal filaments; stigma discoid, entire. On the higher parts of the Sierra Nevada; June 18. Root apparently thick and perennial. Leaves 3 or 4 inches long, including the short petiole, 5 to 8 lines wide, finely dissected. Tube of the calyx 2 inches or more in length; the segments half an inch long. Petals bright yellow, nearly an inch long. Stigma broad and flat. Fruit not seen.

ŒNOTHERA (GODETIA) RUBICUNDA, *Lindl. Bot. Reg. t.* 1856. In the Sierra Nevada; June.

PEUCEDANUM NUDICAULE, *Nutt. in Torr. and Gray, Fl.* 1, *p.* 627, var. ELLIPTICUM. Minutely and softly pubescent; fruit narrowly elliptical, nearly three times as long as broad, the winged margin as wide as the disk. Round Valley, near the sources of the Sacramento, in the Sierra Nevada; June 27. Intermediate between P. nudicaule and P. macrocarpum, having exactly the foliage of the former and the fruit of the latter. The roots of this species are used as food by the natives.

PEUCEDANUM TRITERNATUM, *Nutt. in Torr. and Gray, Fl. l. c.* Seseli biternatum, *Pursh, Fl.* 1, *p.* 197; *Hook. Fl. Bor.-Amer.* 1, *p.* 304, *t.* 94. Sierra Nevada. The roots of this plant, in a dried state, were brought home by Lieutenant Beckwith. They are about the size of "peanuts," and are collected very largely by the Indians. When dried they are hard but brittle, and have a mild sweet taste. They afford a good proportion of the food of some tribes. Besides a large quantity of starch, they contain much other nutritious matter.

CYMOPTERUS MONTANUS, *Nutt. in Torr. and Gray, Fl.* 1, *p.* 624; *Gray, Pl. Fendl. p.* 67. Summit of the Goshoot Mountain, Central Utah. In the solitary specimen which the collection contained, the flowers are in a singular abnormal condition. The upper part of the ovary is furnished with ten spongy wings, which extend beyond the flower. The stamens are reduced to rudiments. The teeth of the calyx are normal. Instead of five petals there are only two or three, and these are of an unusual form. The styles are conspicuous, but seem to be destitute of stigmas.

CHÆNACTIS STEVIOIDES, *Hook. and Arn. Bot. Beech. p.* 371. Foot of the Sierra Nevada, on the eastern side; June.

LAYIA GLANDULOSA, *Hook. and Arn. Bot. Beech. p.* 358. Eastern side of the Sierra Nevada; June. Rays white.

TETRADYMIA GLABRATA (n. sp.): shrubby, divaricately branched, unarmed, young branchlets, and foliage loosely clothed with floccose white wool, which is soon deciduous; leaves subulate or acerose, rather fleshy; the primary ones erect (none of them converted into spines); the secondary ones crowded in axillary fasciales, glabrous; scales of the tomentose-canescent involucre and flowers four; hairs of the achenium much shorter than the barbellate-denticulate bristles of the pappus. On the Sierra Nevada, June 16. This is distinguished from T. Nuttallii by the acerose, terete, or angled and fleshy leaves, mostly mucronate or pointed, and glabrous, or soon glabrate: from T. spinosa (which it resembles in the secondary leaves) by the fewer flowers and involucral scales, the hairs of the ovarium much shorter than the pappus, &c.; and from both of the entire want of spines. It belongs to Tetradymia proper.

DODECATHEON INTEGRIFOLIUM, *Hook. Fl. Bor.-Am.* 2, *p.* 118; *and Bot. Mag. t.* 3622. In a cañon between Salt Lake and the Sierra Nevada; May.

PHLOX CANESCENS (n. sp.): dwarf, very much branched, and densely caespitose, tomentose when young, and canescent; leaves acerose, imbricated, at length recurved-spreading, not rigid, very woolly towards the base, the lower ones marcescent; flowers sessile; teeth of the calyx similar to the leaves, and fully as long as the woolly tube; tube of the corolla much longer than the calyx and the cuneiform obovate retuse lobes. P. Hoodii, *Torr. in Stansb. Exped. p.* 304. On the Cedar Mountains, south of the Great Salt Lake. This species (of which badly preserved specimens were also gathered by Colonel Fremont, in his second expedition) is allied to P. Hoodii and P. Douglasii. From the former it is distinguished by its more slender leaves and calyx-lobes, and much longer corolla; from the latter (which has longer calyx-teeth than is shown in Hooker's figure) it is distinguished by its woolliness, its less rigid foliage, longer calyx-lobes, and smaller corolla, but with the tube proportionally longer. The ovules are solitary in each cell. The limb of the corolla appears to be white; its tube yellowish.

GILIA PULCHELLA, *Dougl. in Hook. Fl. Bor.-Amer.* 2, *p.* 74. At the foot of the Humboldt Mountains, on the eastern side; May.

PHACELIA INTEGRIFOLIA, *Torr. in Am. Lyc. Nat. Hist. N. Y.* 2, *p.* 222, *t.* 3. Valley of Humboldt River, Utah; June 8.

PHACELIA HUMILIS (n. sp.): annual, low, much branched from the base; leaves oblong, spatulate or lanceolate, all simple and entire, indistinctly veined, minutely hirsute-pubescent like the branches, and glandular dotted; racemes densely-flowered; segments of the calyx linear, obtuse, hispid, a little shorter than the (deep violet-colored) corolla; stamens exerted. Near the summit of the Sierra Nevada, California; June. A well-marked species, three or four inches high, somewhat cinereous, with a fine pubescence, except the inflorescence, and especially the calyx, which is hispid with rigid white hairs. Leaves an inch or less in length, short-petioled. Corolla short, when expanded three lines in diameter; the base biplicate between the stamens. Filaments sparingly hispid above. Style glabrous. Ovules two in each cell. Capsule 2–3-seeded. This can hardly be the P. canescens of Nuttall, in Pl. Gambell., which accords better with some states of P. circinata.

SCROPHULARIA NODOSA, *Linn.; Benth. Pl. Hartweg. no.* 1877. Foot of the Sierra Nevada; June. The leaves are smaller, much truncate at the base, and more laciniate-toothed than the plant of the Atlantic States.

COLLINSIA PARVIFLORA, *Dougl. in Lindl. Bot. Reg. t.* 1802. Foot of the Humboldt Mountains; May.

PENTSTEMON SPECIOSUS, *Dougl. in Lindl. Bot. Reg. t.* 1270. Mountains in the western part of Utah; June.

PENTSTEMON HETEROPHYLLUS, *Lindl. Bot. Reg. t.* 1899? Sierra Nevada, California, on the summit of the mountains; June. Two forms, if not species, have been merged by Hooker and

Arnott under P. heterophyllus. The present single specimen resembles the var. *α*, in the narrow and marginless sepals, and in the smaller flowers; but the peduncles are principally three-flowered. Not improbably it belongs to an entirely different species.

PENTSTEMON HETERANDRUM (n. sp.): glabrous; stem slender, virgate; leaves lanceolate or oblong-linear, obtuse, callose-serrulate, obtuse or subauriculate at the base; panicle spicate, interrupted; cymes subsessile, several-flowered; calyx puberulous, the segments ovate-lanceolate; corolla (nearly white) infundibuliform, slightly gibbous above, with 5 short subequal lobes, in æstivation various; stamens glabrous, straightish, of nearly equal length, all antheriferous, or the fifth without an anther. Sierra Nevada, California; June 30. Flower white, with pink lines half an inch in length. Cauline leaves an inch long, and 3 lines wide; the floral ones successively reduced to small bracts. Anthers glabrous; the cells distinct, moderately diverging. Stigma minute and simple. Ovary, &c., apparently as in Pentstemon. Fruit not seen. Two peculiarities are to be noticed in this remarkable plant, either of which would have been sufficient to exclude it from Pentstemon, but both prove to be inconstant in the species. One of these relates to the stamens, which, in the flowers examined, were perhaps more frequently completely *pentandrous* than otherwise; the fifth (posterior) filament being similar to the others, and bearing either an exactly similar anther, or sometimes one with rather smaller cells, and with the filament or connective prolonged into a short and blunt apical appendage, as shown in figures 9 and 10. In some flowers, however, this anther was found to be reduced to a single and rather imperfect cell, and a bare rudiment of the second cell, as in fig. 11; in others again, (as in fig. 12 and fig. 6,) the fifth stamen is wholly destitute of any trace of anther, as in Pentstemon universally, with this exception, if such it be. It is also to be noted that the stamens of this plant are nearly equal in length, at least when all five are antheriferous, and that they are inserted into the very base of the corolla. The remaining peculiarity relates to the æstivation of the corolla; in which, although some of the flower-buds plainly have the two posterior lobes, or one of them, exterior to the others, in the manner of the Antirrhinideæ generally, (this being, indeed, the only absolute character of that suborder), as shown in figures 3 and 4; yet, in quite as many instances we find the lateral lobes exterior in the bud, and covering the two posterior as well as the anterior, (as is represented in figure 2), in the manner of the Rhinanthideæ: a new and striking instance of the instability of the modes of æstivation of the corolla, and one not altogether unexpected, since Mr. H. T. Clark, a former pupil of Dr. Gray, and an acute and zealous naturalist, showed him several years ago that both modes occur in Mimulus ringens, M. moschatus, &c.

MIMULUS LUTEUS, *Linn.* In the Sierra Nevada; June.

CASTILLEJA HISPIDA, *Benth. in Hook. Fl. Bor.-Amer.* 2, *p.* 105. Cedar Mountains, south of Great Salt Lake; May.

CASTILLEJA PALLIDA, *Kunth.* Foot of the Humboldt Mountains, on the eastern side; May.

AUDIBERTIA INCANA, *Benth. in Bot. Reg. t.* 1469; *and in DC. Prodr.* 12, *p.* 359. On the Sierra Nevada; June 20. Flowers blue.

MONARDELLA ODORATISSIMA, *Benth. Lab. p.* 332; *and in DC. Prodr.* 12, *p.* 190. *β.* GLABRIUSCULA; nearly glabrous; branches slender; leaves oblong-lanceolate, narrowed to a petiole at the base, rather acute; heads terminal; bracts ovate, (colored,) shorter than the calyx, rather acute; teeth of the calyx ovate-lanceolate, acute, unarmed. Sierra Nevada; July 8. Differs from M. odoratissima in its larger and conspicuously petiolate leaves, and in the narrower acutish bracts, &c. Flowers rose-colored.

Most of the species of this genus have the narrow lobes of the corolla sacculate at the apex; a character which seems to have escaped the notice of Mr. Bentham.

MERTENSIA OBLONGIFOLIA, *G. Don, Syst. Gard.* 4, *p.* 372; *DC. Prodr.* 10, *p.* 92. Pulmonaria oblongifolia, *Nutt. in Journ. Acad. Phil.* 7. *p.* 13. Pass in Humboldt Mountains; May 23. Flowers blue. This species was found also in various parts of Utah, by Colonel Fremont.

ERITRICHIUM GLOMERATUM, *DC. Prodr.* 10, *p.* 131. Myosotis glomerata, *Nutt. Gen.* 1, *p.* 112; *Hook. Fl. Bor.-Amer.* 2, *p.* 82, *t.* 162. Summit of Humboldt Mountains; May 27.

ECHINOSPERMUM FLORIBUNDUM, *Lehm. Pug.* 2, *p.* 24; *Hook. Fl. Bor.-Amer.* 2, *p.* 84 *t.* 164; *DC. Prodr.* 10, *p.* 143. Summit of Humboldt Mountains; May 27. Corolla white, finely veined with blue.

GRAYIA POLYGALOIDES, *Hook. and Arn. in Hook. Ic. t.* 271 *and* 388; *Bot. Beech. p.* 387. G. spinosa, *Moq. in DC. Prodr.* 13, *pars* 2, *p.* 119. Chenopodium (?) spinosum, *Hook. Fl. Bor.-Amer.* 2, *p.* 127. Eastern base of the Sierra Nevada; June 15, (in fruit.) This shrub is called *Greasewood* by the hunters.

EUROTIA LANATA, *Moq. Chenop. p.* 81; *and in DC. Prodr.* 13, *pars* 2, *p.* 121. Diotis lanata, *Pursh, Fl.* 2, *p.* 602; *Nutt. Gen.* 2, *p.* 206. Eastern base of the Sierra Nevada; June 15. Flowers monoecious and dioecious. Sepals of ♂ ovate, or rather acute. Moquin (l. c.) asks whether the ♀ flowers are not bibracteate and destitute of a calyx. This is no doubt their true structure, and is the view taken of them by Ledebour, (*Fl. Ross.* 3, *p.* 737.)

ERIOGONUM OVALIFOLIUM, *Nutt. in Journ. Acad. Sc. Phil.* 7, *p.* 51, *t.* 8, *fig.* 1. Eucycla ovalifolia, *Nutt. l. c.* (*n. ser.*) 1, *p.* 166. Eastern base of the Sierra Nevada; June 15. In our solitary specimen there is but a single scape, which is about seven inches high. The leaves are broader than in Nuttall's plant. The filaments are scarcely one-third the length of the sepals, and woolly.

ERIOGONUM CERNUUM, *Nutt. in Journ. Acad. Sc. Phil.* (*new ser.*) 1, *p.* 162, *β.* PURPURASCENS. Eastern base of the Sierra Nevada; June 16. Leaves sometimes almost reniform-orbicular. Scape sparingly and trichotomously branching an inch or two above the base. Peduncles purplish, and involucres glandularly pubescent. Sepals deep rose-color, with pale margins, the exterior ones somewhat retuse, much longer and broader than the inner ones. Filaments shorter than the inner sepals, glabrous. Achenium with a long acuminate point. Embryo curved, the radicle elongated, erect. Differs from the ordinary form of E. cernuum, which is much more branched, and has white flowers.

RUMEX VENOSUS, *Pursh, Fl.* 2, *p.* 733; *Nutt. Gen.* 1, *p.* 240; *Hook. Fl. Bor.-Amer.* 2, *p.* 130, *t.* 174. Mountains in Central Utah, May 12.

AMIANTHIUM NUTTALLII, *Gray, in Ann. Lyc. N. York*, 4, *p.* 123. Helonias augustifolia, *Nutt. in Trans. Amer. Phil. Soc.* (*n. ser.*) 5, *p.* 154. Amiantanthus Nuttallii, *Kunth*, 4, *p.* 181. Foot of Oquirrh Mountain, south end of the Great Salt Lake; May 6.

SISYRINCHIUM GRANDIFLORUM, *Dougl. in Bot. Reg. t.* 1364; *Bot. Mag. t.* 3509; *Hook. Fl. Bor.-Am.* 2. *p.* 207. Pass of Humboldt Mountain; May 23.

IRIS LONGIPETALA, *Herbert in Hook. and Arn. Bot. Beech. p.* 395. Fort of Humboldt Mountains on the east side; May 28.

CAMASSIA ESCULENTA, *Lindl. Bot. Mag. t.* 1486; *Kunth. Enum.* 4, *p.* 347; *Torr. and Gray in Whipple's Report, ined.* Phalangium Quamash, *Pursh, Fl.* 1, *p.* 226. Near the summit of the Sierra Nevada; June 18.

CALOCHORTUS NUTTALLII: stem 2-flowered; leaves very narrowly linear; petals obovate-cuneate, rounded at the summit (white, but yellow at the base), with an oblong dense tuft of hairs on the claw; and just above this a purple spot, with a few scattered hairs. C. luteus, *Nutt. in Journ. Acad. Philad.* 7, *p.* 51, *not of Dougl.* Summit of Noble's Pass, Sierra Nevada; July 3. We have little doubt of this being Nuttall's C. luteus, as it agrees exactly with his description, and with an imperfect but original specimen of that plant, except that the flower, according to Snyder, is white. Mr. N. was uncertain of the color of the flower in his specimen, for he says they are "apparently sulphur yellow." They are, indeed, yellow at the base even in the dried plant, and Mr. Nuttall supposed they were wholly of that color in the fresh state. The marking and other characters of the petals are unlike those of Douglas's C. luteus; and

as his plant was first discovered, and probably first described, the name must be retained for it. Besides, the name given to it by Mr. Nuttall is inappropriate, if, as we feel pretty confident, the flower of his plant is white.

BRODIÆA GRANDIFLORA, *J. E. Smith in Linn. Trans.* 10, *p.* 3; *Kunth, Enum.* 4, *p.* 471. Scape glabrous; umbel, few-(8–12-) flowered; the rays usually 2–4 times longer than the flowers; abortive stamens linear, emarginate, and often also mucronate; cells of the ovary about 10-ovuled. Madelin Pass of the Sierra Nevada; June 26.

BRODIÆA PARVIFLORA, n. sp.: scape roughish; umbel, many-(15–20-) flowered; pedicels shorter than the flower; sterile stamens ovate-lanceolate, rather acute, entire; cells of the ovary 6–8-ovuled. With the preceding; June 26. Bulb ovate, sometimes more than an inch in diameter. Leaves all radical or nearly so, rather shorter than the scape, about two lines wide, smooth. Scape scarcely larger than a crow-quill, the upper part somewhat flexuous, terete, scabrous with very minute points. Umbel about an inch and a half in diameter; pedicels unequal, most of them scarcely half the length of the flowers. Involucrate bracts, 4–8, colored, about as long as the pedicels, the outer ones ovate and acuminate. Flowers about half an inch long, pale purple, the tube somewhat inflated; segments erect, ovate, rather acute. Fertile stamens 3, inserted at the upper part of the tube of the perianth, opposite the inner segments; anthers linear-oblong, acute at each end. Style filiform; stigma dilated, 3-lobed, the lobes fimbrillate-papillose. We have long had specimens of this plant, collected by Colonel Fremont on Prevost's Fork of the Utah; and others brought from the valley of the Sacramento by Dr. Stillman. It is easily distinguished from B. grandiflora by the characters given above.

PTERIS AQUILINA, *Linn.; Torr. Fl. N. York*, 2, *p.* 488. On the Sierra Nevada.

PART II.

Plants collected by Mr. F. CREUTZFELDT, *under the direction of Captain* J. W. GUNNISON, *U. S. Army, in charge of explorations for a railroad from Fort Leavenworth, by the way of the Kansas and Arkansas rivers, to Bent's Fort; thence by the Huerfano river and Sangre de Cristo Pass to the valley of San Luis; thence west from that valley to Grand and Green rivers; thence into the Great Basin, Utah, to the vicinity of the Sevier or Nicollet lake. The collection was commenced at Westport, in Missouri, in June,* 1853, *and finished late in October.*

[The Rocky mountain ranges were entered early in August. The Sierra Blanca, in which the Sangre de Cristo and Roubideau's passes are found, forms the eastern range of the Rocky mountains, and (at the head of San Luis valley, New Mexico) unites with the next western range, which is known as the Sierra San Juan or Sahwatch chain. This sierra, in turn, is joined around the head of Grand river to Elk mountain, and this again to the Roan mountains, the latter being only separated from the former by Blue river, which breaks through in a cañon; and the Roan mountains themselves are separated from the Wahsatch mountains only by the entirely similar cañon passage of Green river, which also breaks through the great east and west connecting range known as the Uinta mountains. All of these ranges, some more or less parallel, while others form cross and connecting chains, constitute properly the great mountain formation of the continent, to which the name of Rocky mountains is applied; the former names applying only to the subdivisions of this great feature.]

ANEMONE VIRGINIANA, *Linn.* Prairies beyond Westport, in Kansas Territory.

CLEMATIS PITCHERI, *Torr. and Gray, Fl.* 1, *p.* 10. Prairies between Westport and Cottonwood Creek.

THALICTRUM CORNUTI, *Linn.* Beyond Westport, in Kansas.

RANUNCULUS DIVARICATUS, *Schrank; Gray, Pl. Wright*, 2, *p.* 8. Kansas.

DELPHINIUM AZUREUM, *Michx.* Beyond Westport.

MENISPERMUM CANADENSE, *Linn.* With the preceding.

ARGEMONE MEXICANA, *Linn.* var. ALBIFLORA, *DC.* Walnut Creek.

THELYPODIUM INTEGRIFOLIUM, *Endl. in Walp. Repert.* 1, *p.* 172. Pachypodium integrifolium, *Nutt.; Hook. and Arn. Bot. Beech. pp.* 321 *and* 74. Coochetopa, Sierra San Juan. In flower. "Flowers reddish purple."

THELYPODIUM WRIGHTII, *Gray, Pl. Wright*, 1, *p.* 7 *and* 2, *p.* 12. In the Rocky Mountains. The specimens resemble Wright's No. 845.

CLEOME LUTEA, *Hook. Fl. Bor.-Am.* 1, *p.* 70, *t.* 25. C. aurea, *Nutt. in Torr. and Gray, Fl.* 1, *p.* 122. Sand-banks of Green River, Utah.

PARNASSIA PARVIFLORA, *DC. Prodr.* 1, *p.* 320; *Hook. Fl. Bor.-Am.* 1, *p.* 82, *t.* 27. Rocky Mountains, in the valley of the Grand River; August. This accords with specimens from the northwest coast, and with Hooker's figure (which is not cited in Torr. and Gray, Fl.) but is still more delicate and slender. The filiform scape is five or six inches long; the petals three lines long; the radical leaves less than half an inch long, but abrupt at the base, shorter than their petiole.

SILENE STELLATA, *Ait.* Upper Arkansas.

ARENARIA FENDLERI, *Gray, Pl. Fendl. p.* 13. Rocky Mountains, near the head of the Rio Grande; August. Resembling Fendler's plant, but not so tall.

PARONYCHIA JAMESII, *Torr. and Gray, Fl.* 1, *p.* 170. Plains near Fort Atkinson.

CALLIRRHÖE INVOLUCRATA, *Gray, Pl. Fendl. p.* 16. Prairies near Bluff Creek.

SIDALCEA MALVÆFLORA, *Gray, Pl. Wright.* 1, *p.* 16. Utah Creek; August.

SIDALCEA CANDIDA, *Gray, Pl. Fendl. p.* 24. In the Rocky Mountains, east of the Rio Grande; August. In flower.

SPHÆRALCEA ANGUSTIFOLIA, *Cav.* var. S. STELLATA, *Torr. and Gray, Fl.* Sandy banks of the Arkansas, near the Rocky Mountains.

CEANOTHUS AMERICANUS, *Linn.* Beyond Westport, near the Arkansas River.

POLYGALA ALBA, *Nutt.* Beyond Walnut Creek; July.

PSORALEA OBTUSILOBA, *Torr. and Gray, Fl.* 1, *p.* 300. Kansas; June.

AMORPHA CANESCENS, *Nutt. Gen.* 2, *p.* 92. Between Westport and Bent's Fort.

DALEA LAXIFLORA, *Pursh, Fl.* 2, *p.* 741. Near Walnut Creek; July.

PETALOSTEMON VIOLACEUM, *Michx. Fl.* 2, *p.* 50, t. 37. With the preceding.

PETALOSTEMON CANDIDUM, *Michx. l. c.* With the preceding species.

OXYTROPIS LAMBERTI, *Pursh, Fl.* 2, *p.* 740. Two varieties: one with pale, and the other with violet purple flowers. Rocky Mountains.

ASTRAGALUS ADSURGENS, *Pall.; Hook. Fl. Bor.-Am.* 1, *p.* 149. Rocky Mountains; August.

BAPTISIA LEUCANTHA, *Torr. and Gray, Fl.* 1, *p.* 385. Arkansas River; June.

HOFFMANSEGGIA JAMESII, *Torr. and Gray, Fl.* 1, *p.* 393. Near Fort Atkinson; July.

SCHRANKIA UNCINATA, *Willd.; Torr. and Gray, Fl.* 1, *p.* 400. Upper Arkansas.

RUBUS DELICIOSUS, *Torr. in Am. Lyc. Nat. Hist. N. York*, 2, *p.* 196. Rocky Mountains. Leaves only.

ŒNOTHERA SPECIOSA, *Nutt. in Journ. Acad. Philad.* 2, *p.* 119. Beyond Westport.

ŒNOTHERA SERRULATA, *Nutt.* var. DOUGLASSII, *Torr. and Gray, Fl.* 1, *p.* 502. Beyond Walnut Creek.

STENOSIPHON VIRGATUS, *Spach, Onagr. p.* 64.

GAURA SINUATA, *Nutt.* Near Fort Atkinson.

GAURA COCCINEA, *Nutt. Gen.* 1, *p.* 249. Walnut Creek.

EPILOBIUM ANGUSTIFOLIUM, *Linn.* Common in the Rocky Mountains.

LYTHRUM ALATUM, *Pursh; Torr. and Gray, Fl.* 1, *p.* 481. From Westport to Walnut Creek.

MENTZELIA (BARTONIA) NUDA, *Torr. and Gray, Fl.* 1, *p.* 534. Near Fort Atkinson; July.

CRYPTOTÆNIA CANADENSE, *DC. Prodr.* 4, *p.* 119. Beyond Westport; June.

THASPIUM CORDATUM, *Torr. and Gray, Fl.* 1, *p.* 615. Near Westport; June.

CONIOSELINUM CANADENSIS, *Torr. and Gray, Fl.* 1, *p.* 619. In the Rocky Mountains; August. In flower only.

GALIUM CONCINNUM, *Torr. and Gray, Fl.* 2, *p.* 23. Beyond Westport, Arkansas River; June.

GALIUM BOREALE, *Linn.* In the Rocky Mountains; August.

OLDENLANDIA ANGUSTIFOLIA, *Gray, Pl. Wright.* 2, *p.* 68. Beyond Westport; June.

BRICKELLIA GRANDIFLORA, *Nutt. in Trans. Amer. Phil. Soc.* (*n. ser.*) 7, *p.* 287. Rocky Mountains; August.

ASTER MULTIFLORUS, *Ait.* Utah Creek; August.

MACHÆRANTHERA TANACETIFOLIA, *Nees; Gray, Pl. Wright, I, p.* 90. Fort Atkinson.

ERIGERON GLABELLUM, *Nutt. Gen.* 2, *p.* 147; *Torr. and Gray, Fl.* 2, *p.* 173. Utah Creek; August.

TOWNSENDIA FENDLERII, *Gray, Pl. Fendl. p.* 70. Valleys in the Rocky Mountains; August.

COREOPSIS PALMATA, *Nutt. Gen.* 2, *p.* 180. Arkansas River.

GAILLARDIA PULCHELLA, *Foug.; Torr. and Gray, Fl.* 2, *p.* 366. Beyond Walnut Creek; July.

ACTINELLA LANATA, *Nutt. Trans. Amer. Phil. Soc.* 7, *p.* 380. White River Mountains, Utah; October. The leaves are nearly smooth, and strongly punctate; awn of the pappus half as long as the scale. Seems about intermediate between this species and *A. Torreyana*, Nutt.

ARTEMISIA FILIFOLIA, *Torr. in Ann. Lyc. N. York*, 2, *p.* 211. Sand-banks of Green River, Utah; October.

ARTEMISIA DISCOLOR, *Dougl.; Besser; DC. Prodr.* 6, *p.* 109. Roubideau's Pass, Rocky Mountains; Sierra Blanca.

ANTENNARIA LUZULOIDES, *Torr. and Gray, Fl.* 2, *p.* 430. Higher parts of the Rocky Mountains; August.

CACALIA TUBEROSA, *Nutt. Gen.* 2, *p.* 138. Beyond Westport; June.

TETRADYMIA INERMIS, *Nutt. in Trans. Amer. Phil. Soc. l. c. p.* 415. Rocky Mountains; August.

LOBELIA LEPTOSTACHYS, *Alph. DC. Prodr.* 7, *p.* 376. Prairie near Westport.

LYSIMACHIA CILIATA, *Ait.* West from Westport, Arkansas River.

ASCLEPIAS PURPURASCENS, *Linn.* With the preceding.

ASCLEPIAS VERTICILLATA, *Linn.; β. Torr. in Nicollet's Report, p.* 154. Fort Atkinson. This is a dwarf variety, being often not more than 3–6 inches high.

ASCLEPIAS TUBEROSA, *Linn.* Beyond Westport, Arkansas River.

APOCYNUM CANNABINUM, *Linn.* Beyond Westport and Walnut Creek; June, July.

EUSTOMA RUSSELIANUM, *Don; Griseb. in DC. Prodr.* 9, *p.* 51. Near Fort Atkinson; July.

GENTIANA AFFINIS, *Grisebach, in Hook. Fl. Bor.-Am.* 2, *p.* 56. In the mountains, near Utah Creek; January.

IPOMÆA LEPTOPHYLLA, *Torr. in Frem.* 1*st Report, p.* 94, *and in Emory's Rep. p.* 148, *t.* 11. Walnut Creek; July. Dr. James was mistaken in supposing this handsome species to be an annual. It has a large perennial root, which has endured for four or five years in the Botanic Garden at Cambridge.

PHLOX ARISTATA, *Michx.* 1, *p.* 144. West from Westport, Kansas; June.

GILIA PULCHELLA, *Dougl. in Hook. Fl. Bor.-Am.* 2, *p.* 74. Rocky Mountains; August.

POLEMONIUM PULCHERRIMUM, *Hook. Bot. Mag. t.* 2979. Rocky Mountains; August.

GILIA PINNATIFIDA, *Nutt. in Herb. Acad. Philad.?* In the Rocky Mountains, near the head of the Rio Grande; August. If this be a variety of Nuttall's plant (which is Fendler's No. 655) it is remarkable for its much less lobed leaves; those of the branches being mostly entire.

GILIA GUNNISONI, (n. sp.): annual; stem paniculately much branched from the base, nearly glabrous, as are the leaves; the latter alternate and scattered, subulate-filiform, all entire, mucronate; the crowded bracts viscid-puberulent (like the branchlets), subulate, with the dilated lower portion viscidly villous-ciliate, mostly shorter than the flowers, which are capitate-clustered at the summit of the branchlets; teeth of the calyx pungently pointed, a little shorter than the tube of the salver-shaped white corolla; stamens inserted in the sinuses of the corolla, rather shorter than its obovate lobes; ovules 2 or 3 in each cell. Sand-banks of Green River, Utah; October. Root slender, evidently annual; the stems or branches 6 or 8 inches high. Leaves all alternate, slender; the cauline and rameal scattered, filiform; the lower nearly an inch long; the upper gradually reduced to small subulate bracts. Calyx somewhat pubescent. Corolla 3 to 4 lines long, the limb rather shorter than the tube; style pubescent below.

MARTYNIA PROBOSCIDEA, *Glox.* Near Walnut Creek; July.

DIPTERACANTHUS CILIOSUS, *N. ab E. in DC. Prodr.* 11, *p.* 122. Beyond Westport; June.

DIANTHERA PEDUNCULOSA, *Linn.* (Rhytiglossa pedunculosa, *N. ab E.*) Kansas, beyond Westport; June.

PENTSTEMON COBÆA, *Nutt.; Hook. Bot. Mag. t.* 3465. Prairie between Westport and Bluff Creek; June.

PENTSTEMON DIGITALIS, *Nutt.; Hook. Bot. Mag. t.* 2587. With the foregoing.

ORTHOCARPUS LUTEUS, *Nutt. Gen.* 2, *p.* 57. Utah Creek; August.

CASTILLEJA PURPUREA, *Don.* Valleys of the Rocky Mountains; August.

MONARDA FISTULOSA, *Linn.*; *Benth. in DC. Prodr.* 12, *p.* 361. Damp valleys of the Rocky Mountains.

MONARDA ARISTATA, *Nutt. in Trans. Amer. Phil. Soc.* (*n. ser.*) 5, *p.* 186; *Benth. l. c.* Roubideau's Pass; August. The specimens are evidently annual.

ERITRICHIUM GLOMERATUM, *DC. Prodr.* 10, *p.* 131. Myosotis glomerata, *Nutt. Gen.* 2, *p.* 112; *Hook. Fl. Bor.-Am.* 2, *p.* 80, *t.* 162. Declivities of the Rocky Mountains; August. A very rough form of the plant; flowers white, conspicuous.

SOLANUM TRIFLORUM, *Nutt. Gen.* 1, *p.* 128; *Dunal in DC. Prodr.* 13, *part* 1, *p.* 45. Near the Rocky Mountains; August. Leaves narrower and with fewer teeth on the lobes than usual. Stem branching from the base, and prostrate. Flowers pale blue.

ABRONIA FRAGRANS, *Nutt. in Herb. Hook.; Hook. Kew. Jour. Bot.* 5, *p.* 261. Rocky Mountains; August. This is in Wright's (1711) and several other collections, as well as in Geyer's; but no character of it has yet been published. It is distinguished from A. mellifera by its pure white "porcelain-colored" flowers, scarcely winged fruit, and especially by the involucre, composed of very large, broadly ovate, scarious and white leaflets.

OXYBAPHUS AUGUSTIFOLIUS, *Torr. in Ann. Lyc. New York*, 2, *p.* 237; *Sweet; Choisy in DC. Prodr.* 13, *pars* 1, *p.* 433; var. LINEARIS. Fort Atkinson, Arkansas river, and Roubideau's Pass, Sierra Blanca, Rocky Mountains.

EUPHORBIA MARGINATA, *Pursh, Fl.* 2, *p.* 607. New Fort Massachusetts, San Luis Valley; August.

POLYGONUM LAPATHIFOLIUM, *Linn; var.:* leaves narrowly lanceolate, roughly pubescent on the veins underneath and on the margin; sheaths slightly hairy, ciliate with short hairs; peduncles glandularly pubescent and hispid. Between Westport and the Rocky Mountains; July.

ERIOGONUM ANNUUM, *Nutt. in Amer. Phil. Trans.* (*n. ser.*) 5, *p.* 164; *Benth. Eriog. in Linn. Trans.* 17, *p.* 414. Sandy river valleys, near Fort Atkinson, Arkansas river; July.

ERIOGONUM ALATUM, *Torr. in DC. Prodr.* 15, (*ined.*) *and in Sitgreaves's Rep. p.* 168, *t.* 8. Near the Rocky Mountains, on hill-sides; August. Plant 2-3 feet high. There is some mistake about E. alatum, in *Hook. Jour. Bot. and Kew. Gard. Misc. for September*, 1853. That species is not enumerated in Fremont's reports, and was described for the first time in the report of Captain Sitgreaves, which was not published till the summer of 1853. But specimens of the plant were distributed from Fremont's and other collections, with the manuscript name.

ERIOGONUM JAMESII, *Benth. in DC. Prodr.* 14, (*ined;*) *Torr. in Sitgreaves's Rep. p.* 168. E. sericeum, *Torr. in Ann. Lyc. N. York*, 2, *p.* 241, (*excl. syn.*) On the Sierra San Juan; September. This plant possesses considerable astringency, and is used as a remedy for diarrhœa by the hunters and Indians.

ERIOGONUM CERNUUM, *Nutt. in Jour. Acad. Phil.* (*n. ser.*) 1, *p.* 162; *Torr. in Sitgreaves's Rep. l. c.* This species in its early state has radical leaves only, which are clothed with a white tomentum, and the scape is sparingly branched. Later in the season the lower part of the stem or caudex, below the primary leaves, elongates and repeatedly forks, producing a tuft of leaves at every principal division, thus converting the scape into a leafy stem. Western side of the Sierra San Juan; September. Sepals white, often with a deep rose-colored midrib.

ERIOGONUM EFFUSUM, *Nutt. l. c.* *β.* LEPTOPHYLLUM, *Torr. in Sitgreaves's Rep. p.* 168, *t.* 10. Declivities of the Rocky Mountains; August.

Var.? FOLIOSUM: branches at first woolly, but at length nearly glabrous, leafy; leaves crowded, linear, revolute when old, nearly glabrous; cymes small, the rays diverging, very short, compound; involucre campanulate, few-flowered, glabrous, acutely 5-toothed; exterior sepals obovate, emarginate, interior similar in form, but one-third smaller. High prairies, San Luis valley; August.

ERIOGONUM LEPTOCLADON (n. sp.): stems slender, moderately branching, the internodes elongated, clothed with a deciduous woolly pubescence, nearly naked above; leaves lanceolate-linear, woolly, like the stem; inflorescence loosely paniculate, the ultimate divisions somewhat racemose; involucre campanulate, woolly, 5-toothed, smaller than the flowers; calyx campanulate; sepals somewhat equal, very obtuse, and slightly emarginate; filaments as long as the sepals, hairy nearly to the summit. Sandy soil on Green river; October. A shrub, about two feet high; the branches dichotomous, or sometimes trichotomous, of a greenish hue when the wool is detached; the ultimate divisions short, and not cymose. Involucre scarcely a line and a half long, few-(6-10-)flowered. Bracteoles linear, minutely glandular on the margin. Perianth glabrous, obtuse at the base. Achenium with a long glabrous beak. Embryo curved, the cotyledons orbicular; radicle enlongated. Allied to *E. effusum*, but much more slender, and differs also in the inflorescence.

ERIOGONUM CORYMBOSUM, *Benth. in DC. Prodr.* 14, (*ined.*) *β.* DIVARICATUM: shrubby and much branched, clothed with a dense white tomentum; leaves oblong lanceolate, on very short petioles, undulate on the margin, approximated; cymes large and widely spreading, the primary and secondary divisions trichotomous, the ultimate dichotomous; involucre oblong-campanulate, obtusely 5-toothed; flowers (middle-sized) glabrous; exterior sepals broadly obovate, emarginate, the inner narrower and rather shorter; bracteole spatulate-linear; filaments hairy towards the base; ovary attenuated, glabrous; styles very long and exserted. Near springs on Green river; October. About a foot and a half high; leaves about three-fourths of an inch long, and nearly half that breadth. Perhaps a distinct species from *E. corymbosum* of Bentham, which, however, was founded on a specimen in Dr. Torrey's herbarium, collected by Colonel Fremont, very near where Lieutenant Beckwith's plant was found.

ERIOGONUM UMBELLATUM, *Torr. in Annal. Lyc. N. York*, 2, *p.* 241; *and in Sitgreaves's Rep. t.* 12; *not of Benth.* Near the Rocky Mountains.

QUERCUS IMBRICARIA, *Willd. Spec.* 4, *p.* 428; *Michx. f. Sylv.* 1, *p.* 69, *t.* 15. Upper Arkansas. A handsome tree from 35 to 45 feet high, with a trunk sometimes 18 inches in diameter.

QUERCUS ALBA, *Linn.; Michx. f. Sylv.* 1, *p.* 17, *t.* 1. *β?* GUNNISONII: shrubby; leaves oblong, somewhat coriaceous, smooth above, minutely pubescent underneath, pinnatifidly lobed, the lobes nearly equal, entire, semi-ovate, obtuse; fruit on a long peduncle; cup hemispherical; scales oblong, flattish, with a short, abrupt, discolored acumination; gland ovate. On declivities of mountains. Coochetopa Pass, Sierra San Juan. A shrub 6–10 feet high. Acorns less than half as large as in Q. alba.

ABIES TAXIFOLIA, *Lamb. Pin.* 2, *t.* 47. Roubideau's Pass. A handsome tree growing from 35 to 40 feet high, and 12 to 16 inches in diameter. The specimens are without cones. The leaves are from an inch and a quarter to nearly two inches long, very slender and glaucous on both sides.

PINUS (undetermined); apparently between P. flexilis of James and P. Strobus. Highest places in the Coochetopa. Leaves in fives, about an inch and a half long, besmeared with a clear colorless balsam. This is the same pine that Col. Fremont collected on his first expedition, and is noticed in the Botanical Appendix to his Report, 1843, p. 97. For want of the cones, it cannot be satisfactorily determined. Perhaps it belongs to that section of the genus which includes P. edulis, *Engelm.* and P. monophylla, *Torr.*

PINUS SABINIANA, *Dougl. Mssc.; Lamb. Pin.* (*ed.* 2), 2, *p.* 146, *t.* 80; *Endl. Syn. Conif. p.* 159. Valley of the Sacramento. One of the cones brought home by Lieut. Beckwith measured 9 inches in height, by 21 inches in circumference.

JUNIPERUS VIRGINIANA, *Linn.; Michx. f. Syl.* 2, *p.* 354, *t.* 155; *Endl. Synops. Conif. p.* 27. Coochetopa. A small tree, not exceeding 15 feet in height.

JUNIPERUS COMMUNIS, *Linn.; Endl. l. c.* Prostrate under and around trees. Roubideau's Pass.

TRADESCANTIA VIRGINICA, *Linn.; Bot. Mag. t.* 105; *Kunth., Enum.* 4, *p.* 81. Prairies, Upper Arkansas; June.

PLATANTHERA LEUCOPHÆA, *Gray, Bot. N. States, p.* 472. Orchis leucophæa, *Nutt. in Trans. Amer. Phil. Soc.* (*n. ser.*) 5, *p.* 161. Prairies near Westport.

MELANTHIUM VIRGINICUM, *Linn.; Torr. Fl. N. York*, 2, *p.* 116. Zygadenus Virginicus, *Kunth, Enum.* 4, *p.* 195. Prairies, Upper Arkansas; July.

ZYGADENUS GLAUCUS, *Nutt. in Jour. Acad. Phil.* 7, *p.* 56. Z. chloranthus. *Richards. Append. to Frankl. Narr. p.* 12; *Hook. Fl. Bor.-Am.* 2, *p.* 177. Anticlea glauca, *Kunth, Enum.* 4, *p.* 192. Roubideau's Pass, Sierra Blanca.

SAGITTARIA VARIABILIS, *Engelm. in Gray's Bot. N. States, p.* 461. S. sagittifolia of most American botanists. In water, Upper Arkansas.

HETERANTHERA LIMOSA, *Vahl, Enum.* 2, *p.* 44; *Kunth, Enum.* 4, *p.* 122. Leptanthus ovalis, *Michx. Fl.* 1, *p.* 25, *t.* 5, *f.* 1. Wet places, Westport, &c., Arkansas river. Corolla usually blue, but a white-flowered variety was found with the common form.

CALOCHORTUS VENUSTUS, *Benth. in Hort. Trans.* (*n. s.*) 1, *p.* 412, *t.* 15, *f.* 2, *var?*: sepals erect; petals obovate, bearded and without a spot below the middle, purple at the base. Grows under trees on high mountains. Utah. Stem 2–3-flowered. Leaves grass-like, about two lines wide. Flowers nearly 3 inches in diameter. Sepals lanceolate, striate with purple veins externally. Petals nearly twice as long as the sepals, the upper half white, pale yellowish-green lower down, where the inside is bearded with longish gland-tipped hairs, which are dark purple at the base. Near the base the hairs are more numerous, and form a transverse

tuft; at the very bottom the claw is dark purple. Differs from *C. venustus* in its much narrower and less bearded petals, and in wanting the red spot above the middle.

Allium cernuum, *Roth; Kunth, Enum.* 4, *p.* 435. Roubideau's Pass. Differs from the description of A. cernuum, in the ovary being 6-toothed, or rather with 3 short processes, each of which is 2-lobed.

Carex vulpinoidea, *Michx. Fl.* 2, *p.* 69; *Torr. Fl. N. York* 2, *p.* 376. C. multiflora, *Muhl. in Willd. Spec.* 4, *p.* 233; *Schk. Car. t. Lll. f.* 154. Between Westport and Bent's Fort.

Scirpus lineatus, *Michx. Fl.* 1, *p.* 32; *Torr. Cyp. p.* 332. In thickets, Upper Arkansas.

S. lacustris, *Linn.; Muhl. Gram. p.* 32; *Torr. Cyp. p.* 221. Bluff Creek.

Cyperus filiculmis, *Vahl, Enum.* 2, *p.* 328; *Torr. Cyp. p.* 267. C. mariscoides, *Elliott, Sk.* 1, *p.* 67. Prairies near Fort Atkinson.

Bouteloua curtipendula, *Torr. in Emory's Report, p.* 153. B. racemosa, *Torr. Fl. N. York* 2, *p.* 449; *not of Lag.* Chloris curtipendula, *Michx. Fl.* 1, *p.* 59. Atheropogon apludoides, *Muhl. Gram. p.* 287. Prairies, Upper Arkansas.

Chondrosium oligostachyum, *Torr. in Marcy's Report, p.* 300. Atheropogon oligostachyum, *Nutt. Gen.* 1, *p.* 78. Eutriana? oligostachya, *Kunth, Enum.* 1, *p.* 96, *and* 2, *p.* 282. On the Upper Arkansas.

Sesleria dactyloides, *Nutt. Gen.* 1, *p.* 65; *Kunth, Enum.* 1, *p.* 323; *Torr. in Emory's Report, p.* 323, *t.* 10. With the last. The flowers are all male in the specimens of this collection. There are thrown out from the root, besides the upright flowering culms, long prostrate runners which produce short verticillate branches and tufts of leaves at the joints, where they also frequently strike root.

Andropogon Torreyanum, *Steud. Syn. Gram. p.* 302.

A. Jamesii, *Torr. in Marcy's Report, p.* 302. A. glaucum, *Torr. in Ann. Lyc. N. York* 1, *p.* 153; *not of Muhl.* Sources of the Arkansas.

Spartina cynosuroides, *Willd. Enum.* 1, *p.* 80; *Torr. Fl. N. York* 2, *p.* 448, *t.* 153. Lowlands of the headwaters of the Arkansas.

Tripsacum dactyloides, *Linn.; Kunth, Enum.* 1, *p.* 469; *Steud. Gram. p.* 362. Plains of the Arkansas.

Elymus Canadensis, *Linn.; Kunth, Enum.* 1. 451; *Torr. l. c.* 476. Between Westport and Bent's Fort.

Panicum capillare, *Linn.; Kunth, Enum.* 1, *p.* 114; *Torr. l. c. p.* 426. With the preceding.

Panicum Crus-galli, *Linn.; Torr. Fl. N. York,* 2, *p.* 424. Damp places. Upper Arkansas. The flowers are hispid and mostly awnless.

EXPLANATION OF THE PLATES.

Plate I. Viola Beckwithii.

Fig. 1, the petals; 2, vertical section of a flower; 3, 4, 5, stamens; 6, pistil: 7, capsule and calyx. All magnified.

Plate II. Sidalcea candida.

Fig. 1, vertical section of the column, ovary, &c.; 2, upper part of the stamineal column, entire; 3, fruit, of the natural size; 4, fruit and calyx; 5, a mature carpel; 6, a seed. All but 3 magnified.

Plate III. Astrgalus Beckwithii.

Fig. 1, vexillum; 2, a wing; 3, keel; 4, calyx and pistil; 4, stamens; 6, pistil, the ovary vertically divided. All enlarged.

Plate IV. Œnothera tanacetifolia.

Fig. 1, vertical section of a flower; 2, stamens; 3, pollen; 4, ovules. All variously enlarged.

Plate V. Tetradymia glabrata.

Fig. 1, a capitulum; 2, receptacle; 3, a flower; 4, corolla and stamens; 5, corolla and stamens laid open; 6, a stamen; 7, transverse section of the ovary; 8, pistil, with the ovary vertically divided; 9, stigmas; 10, a bristle of the pappus. The details variously enlarged.

Plate VI. Pentstemon heterandum.

Fig. 1, a flower; 2, diagram of the æstivation, &c.; 3. 4, normal form for the genus of æstivation of the corolla; 5, vertical section of a flower; 6, corolla laid open, with normal stamens; 7, 8, anterior and posterior view of a perfect stamen; 9, 10, 11, the fifth stamen more or less antheriferous; 12, the fifth stamen reduced to the usual sterile filament; 13, pistil. The details variously enlarged.

Plate VII. Phacelia humilis.

Fig. 1, a flower; 2, corolla laid open, with the stamens; 3, 4, stamens; 5, pistil and calyx; 6, the same in fruit; 7, capsule, &c., vertically divided; 8, a seed; 9, vertical section of the same. The details more or less magnified.

Plate VIII. Phlox canescens.

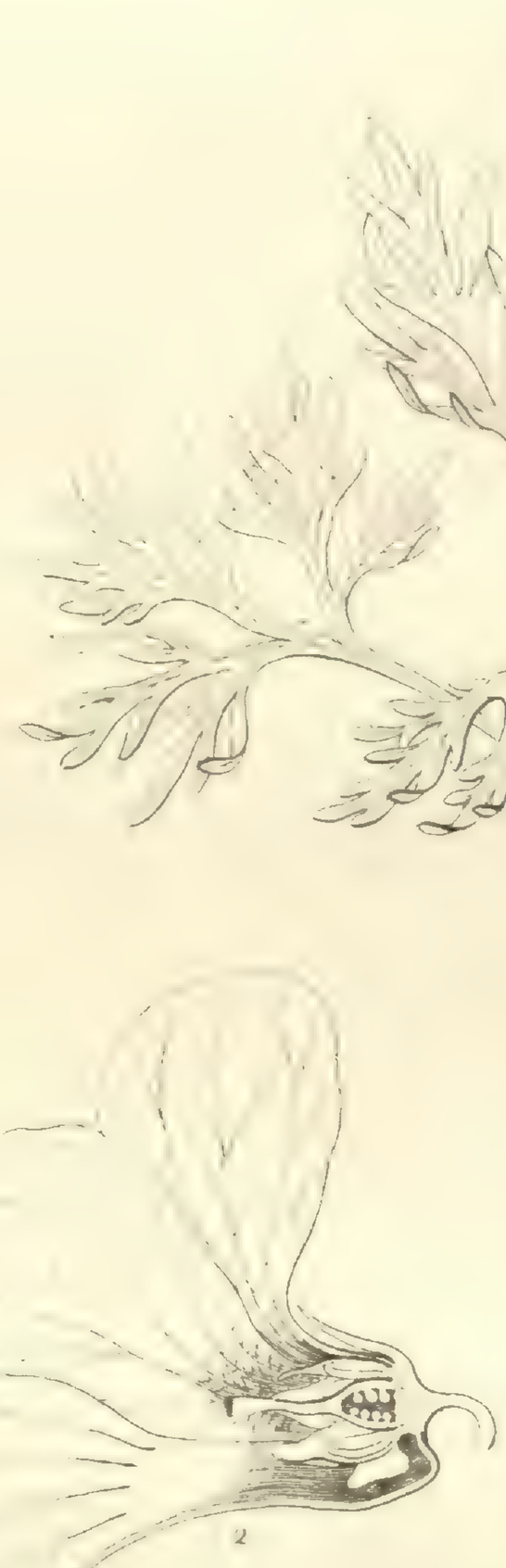
Fig. 1, a flower; 2, the same laid open; 3, 4, stamens; 5, pistil; 6, ovary horizontally divided; 7, vertical section of the ovary. The details variously enlarged.

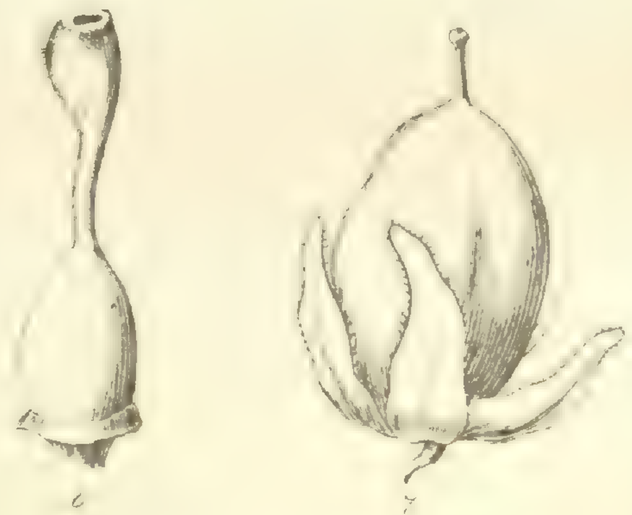
Plate IX. Gilia Gunnisoni.

Fig. 1, a flower; 2, calyx laid open; 3, corolla laid open; 4, pistil—pistil with the ovary vertically divided; 6, ovary transversely divided; 7, calyx and capsule. Details variously enlarged.

Plate X. Abronia fragans.

Fig. 1, a flower; 2, the same laid open; 3, anther; 4, stigma; 5, immature fruit.





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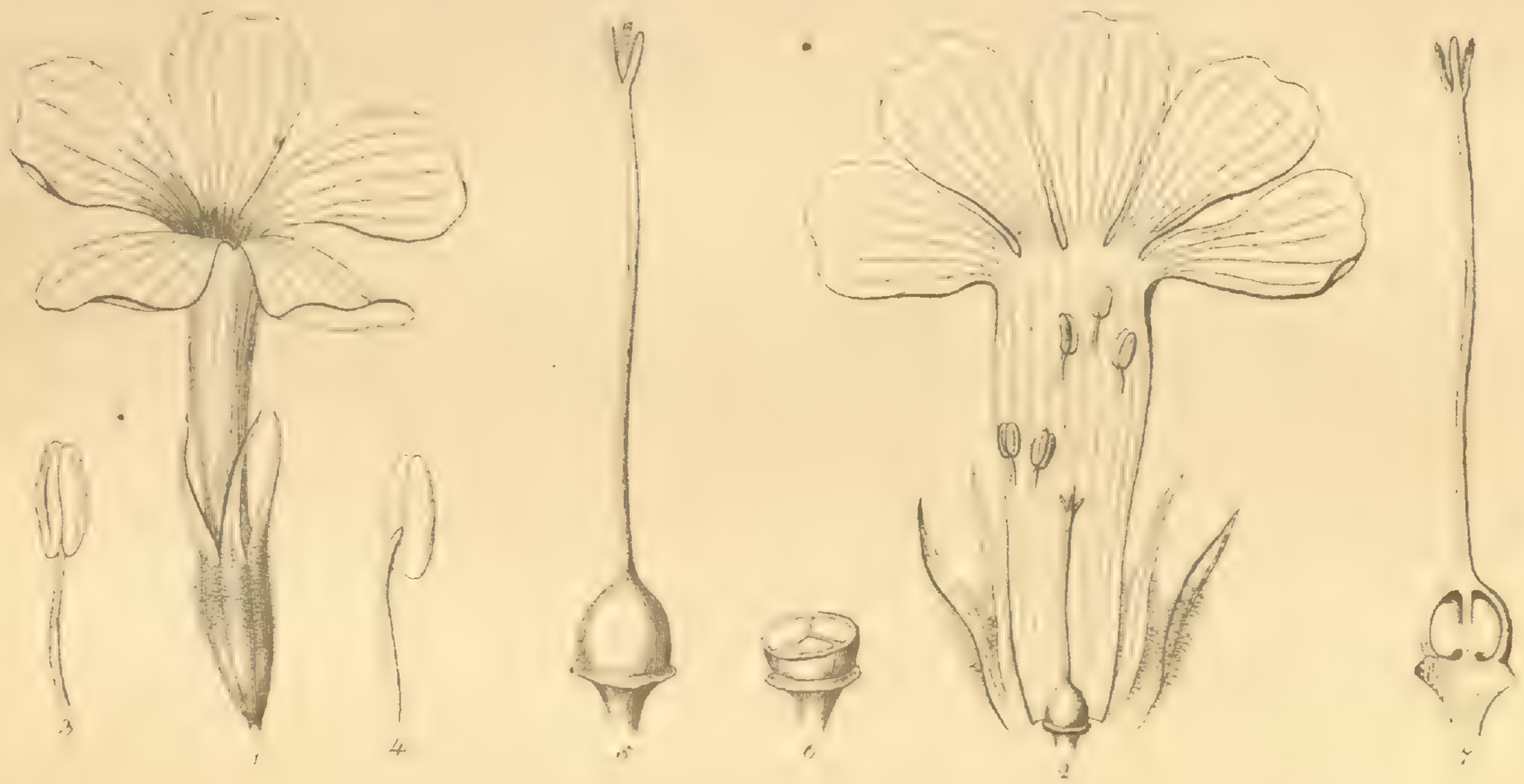
VIOLA BECKWITHII.

Ackerman Lith. 379 Broadway N.Y.

ASTRAGALUS BECKWITHII.



PHLOX CANESCENS

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PHACELIA HUMILIS.

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PENTSTEMON HETERANDRUM.

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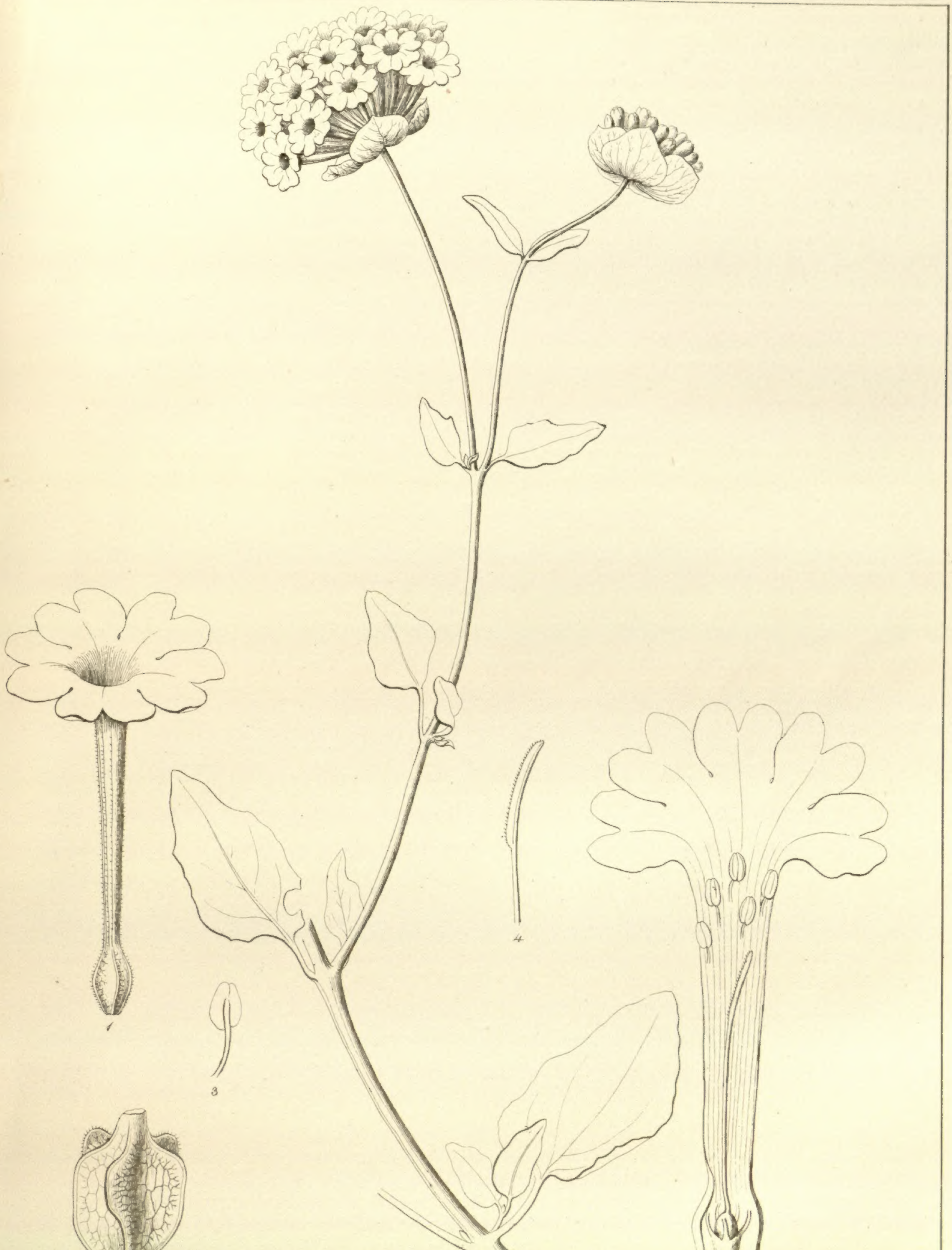
CILIA GUNNISONII.



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ABRONIA FRAGRANS.